a separation plate between said antenna and said chamber.

2. A dry etching apparatus according to claim 1,
wherein said separation plate is dielectric film.

3. A dry etching apparatus according to claim 1,
wherein said antenna is in an atmosphere, and said means for exhausting said chamber to a low pressure vacuum, and
said separation plate is between said atmosphere and said low pressure area.

4. A dry etching apparatus according to claim 1,
wherein said means for introducing the gas has a shower plate, and
a distance between said shower plate and said holder is less than 100mm.

5. A dry etching apparatus according to claim 1,
wherein said separation plate separates said chamber and a second area where the pressure is higher than the pressure in said chamber,
said antenna is a microstrip antenna formed in said second area; and
a coil outside of said chamber.

6. A dry etching apparatus according to claim 1,
wherein said power supplies Ultra High Frequency of a frequency not less than 300MHz and not more than 1GHz.

7. A dry etching apparatus according to claim 5,
wherein a form of the microstrip antenna is disk form.

8. A dry etching apparatus according to claim 5,
wherein the microstrip antenna resonates TM01 mode.

9. A dry etching apparatus according to claim 5,
wherein power supply provides Ultra High Frequency power to said microstrip antenna in a form of a cone.

10. A dry etching apparatus, comprising:

a chamber,

a table in the chamber, in order to set a treated body

means for exhausting a gas in the chamber,

means for introducing the gas into the chamber,

a dielectric inside tube in the chamber,

an electroconductive inside tube having an overlap of height with the dielectric inside tube that is not less than 10mm, which is arranged in the chamber, and which is coupled to earth potential,

a power supply of Ultra High Frequency,

an antenna coupled to the power supply, and

a separation plate which separates the chamber and the antenna.

11. A dry etching apparatus comprising:

a chamber,

a table arranged in the chamber, in order to set a treated body,

means for exhausting a gas in the chamber,

a shower plate which introduces the gas into the chamber,

a power supply of Ultra High Frequency,

an antenna which has a electroconductive plate coupled to the power supply,

a coil covering a periphery of the shower plate and the electroconductive plate, and

a separation plate which separate the chamber and the antenna.

12. A dry etching apparatus according to claim 11,

the antenna has an upper side wherein higher than the electroconductive plate and a lower side lower than the shower plate.

13. A dry etching apparatus, comprising:

a chamber,

a table in the chamber, in order to set a treated body,

means for exhausting a gas in the chamber,

means for introducing the gas into the chamber,

a power supply of Ultra High Frequency power,

a discoidal antenna connected with the Ultra High Frequency power,

a separation plate which separate the chamber and the antenna, and

a coil having a diameter smaller than a diameter of the antenna at an upper part of the antenna.

14. A dry etching apparatus, comprising:

a chamber,

a table arranged in the chamber, in order to set a treated body,

means for exhausting a gas in the chamber,

means for introducing the gas into the chamber,

a power supply of Ultra High Frequency pwer,

an antenna connected with the Ultra High Frequency power,

a separation plate which separates the chamber and the antenna, and

means for forming a convex ECR plane by viewing from the antenna.

15. A dry etching apparatus according to claim 14,

wherein the means for forming a convex ECR plane is a solenoidal coil having an inside diameter not more than 255mm above the antenna.

16. A dry etching apparatus, comprising:

a chamber,

a table in the chamber, in order to set a treated body,

means for exhausting a gas in the chamber,

means for introducing the gas into the chamber,

a power supply of Ultra High Frequency power,

an antenna connected with the Ultra High Frequency power,

a separation plate which separates the chamber and the antenna,

a cavity division whose height is not less than 30mm, equipped upper part away from central part of the antenna.

17. A dry etching apparatus according to claim 16,

a solenoidal coil whose diameter is smaller than diameter of the antenna above the cavity division.

18. A dry etching apparatus comprising:

a chamber,

a table in the chamber, in order to set a treated body,

means for exhausting a gas in the chamber,

means for introducing the gas into the chamber,

a power supply of Ultra High Frequency,

a antenna connected with the Ultra High Frequency power,

a separation plate which separate the chamber and the antenna,

a solenoidal coil whose inside diameter is larger than diameter of the chamber at lower circumference of the antenna.

19. A dry etching apparatus comprising:

a chamber,

a table which is arranged in the chamber, in order to set a treated body,

means for exhausting which exhaust a gas in the chamber,

a shower plate whose diameter is not more than 150mm, which introduces the gas into the chamber,

a power supply of Ultra High Frequency,

a antenna connected with the Ultra High Frequency power,

a separation plate which separate the chamber and the antenna.

20. A dry etching apparatus according to claim 19,

distance between the table and the shower plate is not more than 100mm.

21. In a method for a manufacturing semiconductor device the steps of :

forming a conducting layer on a body,

setting said body in a chamber,

generating plasma in said chamber by applying Ultra High Frequency electric power,

etching said conducting layer by using the plasma on the condition that pressure in said chamber is not more than 0.5Pa and ion current density is not more than 1.0mA/cm2.

22. In a method for manufacturing semiconductor device according to claim 21,

said pressure in said chamber is not less than 0.1Pa.

23. In a method for manufacturing semiconductor device according to claim 21,

said ion current density is not less than 0.6mA/cm2.

24. In a method for manufacturing semiconductor device according to claim 21, further including

controlling current which flows in a coil in the chamber circumference.

25. In a method for manufacturing semiconductor device according to claim 21,

wherein said generating uses ECR resonance with an ECR plane outside the chamber at a central axis of the body, and an ECR plane inside the chamber at periphery.

26. In a method for manufacturing semiconductor device according to claim 21,

the plasma is generated by ECR resonance,

the ECR plane exists inside the chamber at central axis of the body,

the ECR plane exists outside the chamber at periphery.

27. A method of manufacturing semiconductor device comprising the steps of :

forming a conducting layer on a body, and

etching the conducting layer by using the plasma on the condition of forming a bottom convex ECR plane in the chamber.

28. A method of manufacturing semiconductor device according to claim 27,

the plasma is generated by applying Ultra High Frequency electric power.

29. A method of manufacturing semiconductor device according to claim 27,

the bottom convex ECR plane is formed by flowing current in

solenoidal coil equipped in circumference in the chamber

30. A method of manufacturing semiconductor device comprising the steps of :

providing a dry etching apparatus which includes a chamber, a coil which equipped outside the chamber, an antenna for supplying the electromagnetic wave for making the gas in the chamber into plasma, separation board which separates the antenna and the chamber, cavity division whose hight is not less than 30mm formed away from above central of the antenna,

etching a conducting layer above a semiconductor substrate, while top convex ECR plane is formed in the chamber.

31. A method of manufacturing semiconductor device comprising the steps of :

setting a semiconductor body in which a conducting layer is formed in a chamber,

igniting plasma on the condition of top convex ECR plane in the chamber,

etching the conducting layer by the plasma on the condition of bottom convex ECR plane.

32. A method of manufacturing semiconductor device comprising the steps of :

forming a conducting layer above a semiconductor body,

etching the conducting layer by plasma, while in-plane distribution of the ion current density is calculated, current of the solenoidal coil outside circumference of the chamber is controlled based on the calculation result, bottom convex ECR plane is formed.

33. A method of manufacturing semiconductor device according to claim 32,

radio frequency bias apply a table arranged in a chamber in order to set the body,

in-plane distribution of the ion current density is calculated by monitoring peak to peak voltage of the radiofrequency bias.